

DOCUMENT RESUME

ED 277 390

IR 051 733

AUTHOR Garland, Kathleen; Rike, Galen E.
TITLE The Relationship between Scholarly Productivity and Selected Institutional-Level and Individual-Level Variables: A Study of Library and Information Science Faculty Teaching in American Library Association Accredited Programs. Final Report.
PUB DATE 86
NOTE 61p.; Paper presented at the Annual Conference of the Association for Library and Information Science Education (Chicago, IL, January 15-17, 1986) and the Annual Conference of the American Library Association (New York, June 28-July 3, 1986).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150) -- Tests/Evaluation Instruments (160)
EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *College Faculty; College Programs; *Degrees (Academic); *Faculty Publishing; *Faculty Workload; Higher Education; *Information Science; Library Education; *Library Schools; Library Science; Questionnaires; Regression (Statistics); Surveys
IDENTIFIERS Institutional Prestige

ABSTRACT

To determine the relationship between scholarly publication of faculty teaching in American Library Association accredited programs of library and information science and selected individual-level and institutional-level variables, a stratified proportional random sample was taken of 182 faculty members listed in the 1984 "Association for Library and Information Science Education Directory." Usable data were collected from 168 individuals via questionnaires, faculty vitae, online databases, and standard biographical and reference sources. Stepwise logistic regression and chi square analyses were used to determine which variables, or combinations thereof, relate most strongly to scholarly publication. The two related individual-level variables are highest degree earned and number of years elapsed from bachelor's degree to highest degree earned, and the four institutional-level variables are program type, size of faculty, prestige of program, and teaching load. It is concluded that these findings have implications for accreditation of library and information science programs, planning faculty development, and determining tenure, and that they should be of interest to persons seeking faculty positions in library and information science programs. Results of the study are illustrated in 15 figures, and a Scholarly Productivity Study questionnaire, code sheet, and faculty data sheet are appended. References and a bibliography are also included. (KM)

* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)

✶ This document has been reproduced as
received from the person or organization
originating it.

☐ Minor changes have been made to improve
reproduction quality.

• Points of view or opinions stated in this docu-
ment do not necessarily represent official
OERI position or policy.

ED277390

THE RELATIONSHIP BETWEEN SCHOLARLY PRODUCTIVITY AND
SELECTED INSTITUTIONAL-LEVEL AND INDIVIDUAL-LEVEL VARIABLES:
A STUDY OF LIBRARY AND INFORMATION SCIENCE FACULTY TEACHING IN
AMERICAN LIBRARY ASSOCIATION ACCREDITED PROGRAMS

FINAL REPORT
OCTOBER 22, 1986

by

KATHLEEN GARLAND

and

GALEN E. RIKE

IR051733

DEPARTMENT OF LIBRARY AND INFORMATION SCIENCE
BALL STATE UNIVERSITY
MUNCIE, INDIANA 47306

BEST COPY AVAILABLE

"PERMISSION TO REPRODUCE THIS
MATERIAL HAS BEEN GRANTED BY
Kathleen Garland

Abstract

This study examines the relationship between scholarly publication of faculty teaching in American Library Association accredited programs of library and information science and selected individual-level and institutional-level variables. The findings have implications for accreditation of library and information science programs, for planning faculty development, for tenure requirements, and for persons seeking faculty positions in these programs.

A stratified proportional random sample was taken of faculty. Data were collected from questionnaires, faculty vitae, online databases, and standard biographical and reference sources. Stepwise logistic regression and chi square analysis were used to determine which variables, or combinations thereof, relate most strongly to scholarly publication.

Four variables entered the logistic regression equation -- highest degree earned, size of the university, availability of non-student clerical assistance for faculty, and number of different courses taught. Chi square analysis showed six of the eighteen independent variables studied are related at the .05 level of significance to the dependent variable, scholarly publication. The two related individual-level variables are highest degree earned and number of years elapsed from bachelor's degree to highest degree earned. The four institutional-level variables are program type, size of faculty, prestige of program, and teaching load.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	ii
PROBLEM STATEMENT	1
OBJECTIVE OF STUDY	2
IMPORTANCE OF STUDY	3
DEFINITIONS	4
LIMITATIONS	9
ASSUMPTIONS	11
LITERATURE REVIEW	12
PROCEDURE	14
FINDINGS	18
DISCUSSION	26
CONCLUSION	30
FURTHER RESEARCH	31
REFERENCES	33
APPENDIX A	36
APPENDIX B	38
APPENDIX C	41
APPENDIX D	44
APPENDIX E	48
APPENDIX F	50
BIBLIOGRAPHY	53

LIST OF ILLUSTRATIONS

1.	Crosstabulation of Scholarly Productivity by Highest Degree Earned	20
2.	Crosstabulation of Scholarly Productivity by Years Elapsed from Bachelor's to Highest Degree Earned	21
3.	Crosstabulation of Scholarly Productivity by Type of Program	22
4.	Crosstabulation of Scholarly Productivity by Size of Faculty	23
5.	Crosstabulation of Scholarly Productivity by Prestige of Program	24
6.	Crosstabulation of Scholarly Productivity by Teaching Load	25
7.	Crosstabulation of Prestige of Program by Program Type	45
8.	Crosstabulation of Prestige of Program by Number of Different Courses Taught, 1983-84	45
9.	Crosstabulation of Prestige of Program by Size of Faculty	46
10.	Crosstabulation of Prestige of Program by Teaching Load	46
11.	Crosstabulation of Prestige of Program by Prestige of University from which Highest Degree Earned	47
12.	Crosstabulation of Type of Program by Size of Faculty	49
13.	Crosstabulation of Type of Program by Teaching Load	49
14.	Crosstabulation of Number of Different Courses Taught, 1983-84, by Teaching Load	51
15.	Crosstabulation of Size of Faculty by Teaching Load	52

LIST OF TABLES

1. Summary of Stepwise Logistic Regression	26
--	----

Problem Statement

To progress, and perhaps even to survive, a profession depends upon possessing "a body of scientific knowledge, including theory-based research activity and a research methodology, as well as practical skills and applications which inculcate these." [1] The people best qualified to carry out this research activity, and thus add to the body of knowledge in a profession, are its educators.

In spite of the fact that more library and information science educators than ever before possess the doctorate and are indeed capable of doing research, there are continuing complaints about insufficient research in library schools. [2] Nancy Lane's study of 289 doctoral graduates in librarianship found that 38% had no scholarly publications after their dissertations and 73% had produced fewer than 4. [3] In a 1978-79 survey of administrators of library programs accredited by the American Library Association, Mary Kingsbury found that "many library schools have yet to build a tradition of research and publication." [4]

Communication and exchange of research findings by faculty through scholarly publication is important for many reasons. To quote Pauline Wilson,

"1) It produces new knowledge. 2) It discovers new applications for old knowledge. 3) It brings prestige to the university and to the individual researcher. 4) It attracts better faculty and better graduate students. 5) It produces better teaching as new knowledge is integrated into the preparation of students. 6) It develops the faculty member intellectually and professionally...To the above six items must be added a seventh--funded research helps pay the university's

bills." [5]

The problem, then, is insufficient research and scholarly publication in librarianship. The specific problem addressed in this study is insufficient research and scholarly productivity among faculty in programs of library and information science accredited by the American Library Association.

Objective of the Study

The objective of this inquiry is to examine the relationship of level of research productivity as evidenced by scholarly publications to selected individual-level and institutional-level variables using a sample of faculty in American Library Association accredited library and information science programs. These variables were chosen because they were found to be related to research productivity in previous studies. Consideration was also given to variables that could be studied fairly easily considering data collection restraints.

Seven individual-level variables were selected. They are faculty rank, sex, number of years professional experience (i.e. post-M.L.S. experience) outside teaching, highest academic degree earned, field in which highest degree was earned (i.e. library/information science, humanities, physical sciences and engineering, or social sciences), prestige of the institution from which the highest degree was granted, and number of years elapsed from bachelor's degree to highest degree earned.

Eleven institutional-level variables were chosen. They are size of the affiliated university, size of the metropolitan area in which the university is located, region in which the university is located, number of regular full-time faculty members teaching in the accredited program, prestige of the accredited program, prestige of the affiliated university, faculty teaching load, total number of hours per week that graduate assistants assist faculty in teaching and/or research, clerical assistance for faculty (not to include graduate assistants), number of different courses taught during the 1983-84 academic year, and types of programs offered.

Importance of the Study

This study represents one of the first attempts to identify factors associated with scholarly productivity and those which predict publication for faculty members in accredited library and information science programs. Knowledge of such factors allows administrators to plan faculty development programs to encourage scholarly productivity insofar as the appropriate institutional-level variables can be manipulated.

Studies of faculty research productivity in library and information science, such as the one reported here, provide empirical evidence of the need for differing tenure treatment for faculty in the professional schools. If the most important consideration for promotion and tenure were scholarly publications, the use of uniform criteria in

academic institutions would tend to favor certain academic units over others. According to one study of research productivity, "If six refereed journal articles are required for tenure, this criteria would favor faculty in the hard as opposed to soft areas." [6]

Some of the findings in this study could be used to set guidelines for accreditation of master's degree programs in library and information science.

Definitions

Scholarly Productivity

Scholarly productivity is publication, delimited by its length, format, and purpose. To be considered scholarly, a publication must be two or more pages in length, except for one in the American Society for Information Science Annual Proceedings. It may be a monograph or textbook, a chapter in a book, an article, or a paper presented at a meeting and published in its proceedings. The following are general reasons for exclusion of a written work:

- 1) It is the author's opinion rather than based on empirical observation or on analysis based upon empirical observation.

- 2) It is the result of the performance of administrative duties.

- 3) It results from the function of editor, compiler, revisor, or translator, rather than from that of scholar or researcher.

- 4) It is not available to the general public, but only

within a particular library or library educational program. [7]

The following types of publication are excluded:

- 1) "Letters to the editor"
- 2) "Editorial columns or short opinion pieces"
- 3) Regular features, or departments, of the journal
- 4) "Discussions, or panels, if presented in dialog form"
- 5) "Introductions to or summaries of a series of articles dealing with a common topic"
- 6) Announcements (e.g. of master's programs, conferences)
- 7) "Eulogies, personal testimonials, or reminiscences"
- 8) Committee reports
- 9) Conference or meeting summaries
- 10) Bibliographies (e.g. by subject, union lists)
- 11) "State-of-the-art reviews, unless analytical or evaluative"
- 12) "Descriptions of particular libraries, library programs, or library schools, unless analytical or historical"
- 13) Encyclopedia articles. [8]

All monographs are to be included unless they fall within one of the following criteria for exclusion:

- 1) Are unpublished theses or dissertations
- 2) Are translations
- 3) Are edited, rather than authored, by the faculty member

- 4) Are bibliographies or compilations
- 5) Are annual reports (e.g. of libraries, library schools)
- 6) Are new or revised editions of previously published works. [9]

Surveys are included if the title states that a library, program, system, or library school was being surveyed, analyzed, or evaluated [10], or if the word "study" appears in the title.

Textbooks are considered to be representative of scholarly productivity. A monograph is a textbook if it is known to be used as a text in accredited library and information science programs; if it is identified as such in an introduction, preface, foreward, or in its title; or if it codifies rules or regulations (e.g. cataloging rules, administrative policies). It is also considered a textbook if it contains syllabi or course outlines and is published by a commercial publisher. [11]

The following criteria were used in order to distinguish whether a survey or ERIC document was an article or a monograph:

- 1) Articles are less than 50 pages in length.
- 2) Monographs are 50 pages or more in length.
- 3) If number of pages is unknown, the publication is considered to be an article.

Prestige of the Degree Granting Institution

Prestige of the institution from which the faculty member's highest degree was granted was derived from its

institutional rankings reported by Webster from four major reputational rankings of graduate schools from 1959 to 1982. [12] Rankings from this period were chosen because they were closest in time to the graduation dates of the sample faculty members. The rankings utilized were those of Keniston (1959), Cartter (1966), Roose and Andersen (1970), and the Assessment of Research-Doctorate Programs in the United States (1982). Prestige was rated high if the university was included among any of the four rankings in the Webster list and low if it was not.

Size of the Metropolitan Region

Size of the metropolitan region in which the faculty member's academic unit is located was derived from the latest Canadian or United States census data. [13] For U.S. programs, it is the total number of people residing in the Standard Metropolitan Statistical Area (SMSA) in which the unit is located. For Canadian programs, it is the total number of people residing in the Census Metropolitan Area (CMA). Population figures were coded into six categories for data analysis. Appendix B contains the code list.

Region in Which Accredited Program Located

Region in which the accredited program is located was derived from the brochure, "Graduate Library Education Programs Accredited by the American Library Association under STANDARDS FOR ACCREDITATION, 1972, October 1984." This accredited list is published by the American Library Association. The regions are Canada, Northeast, Southeast,

Midwest, Southwest, and West.

Size of the Affiliated University

Size of the student population within the university in which the faculty member's academic unit is located was taken from figures listed in Peterson's Guide to Four-Year Colleges, 1985. American Universities and Colleges was used if the information was not found in the first source. [14]

Teaching Load

Teaching load is the average number of hours per week each faculty member in the sample spent in the classroom during the 1983-84 academic year. It was necessary to average the data if a person were on leave for part of the academic year or if the number of hours spent in the classroom varied from one term to another during the academic year. For chi square analysis this variable was divided into two categories, high and low. High load is >6 hours per week spent in the classroom; low load is <=6 hours.

Number of Preparations

Number of preparations is the number of courses with different titles taught by faculty members in the sample during the 1983-84 academic year.

Prestige of the Affiliated Institution

Prestige of the institution in which the accredited library and information science program is located was determined in the same way as prestige of the degree granting institution.

Prestige of the Accredited Program

Prestige of the accredited program was determined by the

White 1 A (1981) ranking. [15] The White ranking was used because it is recent, includes Canadian as well as United States programs, and is derived similarly to the American Council on Education rankings of Cartter and Roose/Andersen. These rankings were used, among others, in defining the other two prestige variables in this study. Prestige was rated high if the program was on the White list and low if it was not.

Clerical Assistance

This variable was coded either yes or no, depending on whether there were staff members, excluding graduate assistants, whose job description included typing manuscripts for faculty.

A question eliciting continuous level data for this variable appears on the questionnaire sent to heads of programs; however, several respondents stated that it was impossible to answer this question accurately. As a result, the responses to this question were not used in data analysis. The data were transformed to yes or no, as explained above.

Program Types

A distinction was made between accredited programs offering doctoral degrees, or not.

Limitations

In the course of this investigation several limitations became apparent. Included here are a list of the major ones along with a brief discussion of the ways used to determine

the extent of possible error.

Survey Responses

The accuracy of the data contributed by the cooperating schools in the study is one limitation. In some cases the nature of the response was obviously an error due to misinterpretation or misreading of the question. Survey responses that were evidently inaccurate were not used. They were coded as blanks, meaning no data were provided for that item.

Scholarly Productivity Data

Comprehensiveness of the publication lists obtained by author searches of online bibliographic databases is a second major limitation of this study. In an effort to check this possible source of error, curriculum vitae were requested from the deans and directors for the sample faculty members. Lists of publications in these vitae were checked against the lists obtained from the literature search. Correspondence between these two lists was very high. Indeed, in some cases publications were inadvertently omitted from faculty vitae! Error occurred mainly because the literature search failed to identify chapters in books which were written by the sample faculty. Errors of omission occurred to a much lesser extent because articles appeared in journals outside the scope of library and information science.

Correlating Productivity to Institutional Variables

It might be argued that correlates of scholarly productivity to institutional variables are invalid since

sample faculty members may have worked in several universities in the five year period examined for this study. The various institutions in which a faculty member worked during this time may have been quite different in regard to the institutional variables studied. Data were collected on the mobility of sample faculty members from 1979-80 to 1983-84 in order to determine whether this limitation might affect the tests of significance between these variables and scholarly productivity. It was found that 25% of the sample had not been at the same school. Almost 17% were either students during part of the time, or were doing something besides teaching. Most of them had been students. The remaining 8% of the sample (i.e. 14 people) had been at two schools during the 5 year period. Two members of the latter group had worked at one school for all but half an academic year; 7, for all but one academic year.

From these data it does not seem that this limitation seriously affected the outcome of the study. Very little mobility was demonstrated by this sample.

Assumptions

1. Little change occurred within individual schools during the five year period studied with regard to the institutional variables studied.
2. Collecting publication data from online and printed bibliographic sources is preferable to obtaining it directly from sample members because the procedure is more objective.
3. The scholarly nature of a journal article can be

determined by an abstract in the LISA and ERIC databases.

Literature Review

Sociologists have been studying scholarly productivity through publication since the 1940s. Generally, these studies have examined physical scientists, social scientists, or less often, humanists. Previous studies have found differing sets of factors operating for different fields. [16] It seems that the interaction of attributes of individual scientists with factors unique to their disciplines results in the variations which have been found to exist. Using this assumption in a study of research productivity in these disciplines in academia, Wanner, Lewis, and Gregorio found that "a unitary model of scholarly or scientific productivity cannot be assumed to operate in all academic disciplines." [17]

It is clear from previous studies that factors affecting productivity vary by discipline and even within disciplines. The only previous investigation of faculty research productivity in American Library Association accredited library and information science programs was an unpublished study by Vincent Aceto in the late 1960s. Two factors which Aceto found from preliminary results to be related to productivity were highest degree earned and time required to earn the doctorate. [18] Both of these factors are individual-level variables represented in the present investigation.

Nancy Lane studied early factors predictive of later

productivity among doctoral graduates in librarianship. [19] Many of the variables Lane used are inappropriate for this study because the present study focuses upon relationships between research productivity and selected variables present in the working environment of the faculty sampled. Library experience and doctoral institution are two variables Lane found to relate to productivity. They are included in this study, also.

Doctoral institution has been shown to relate to scholarly productivity in other research, too. Bernard M. Meltzer studied publishing by social scientists and found a similar relationship. A second variable Meltzer found to correlate with productivity was amount of time spent in non-academic vocations. [20] A similar variable included in this study is number of years of professional library experience (not including teaching).

Another variable selected for this investigation is faculty rank. Its relationship to scholarly productivity seems to vary according to discipline. John W. Creswell and John P. Bean tested the Biglan model, which categorizes all disciplines into eight groups. They found that senior faculty were not significantly more productive than less experienced non-tenured faculty, except for the SLP (soft-life-pure) group, which includes psychology, anthropology, political science, and sociology. [21]

In a study of library and information science faculty, Robert M. Hayes found faculty with the rank of professor to be more productive than faculty with the rank of associate

professor. He hypothesized that the difference is due to the greater time that professors have had to publish and be cited. However, Hayes took a different approach to studying faculty research productivity. He analyzed citation statistics of tenure level faculty (i.e. Professor or Associate Professor) at 60 schools of library and information science accredited by the American Library Association. [22]

Prestige of university affiliation has been found to have a relationship to scholarly productivity in several studies, indicating that some general, cross-disciplinary factors may exist. [23] This study includes both prestige of university affiliation and of program as independent variables.

In contrast to the Lane and Aceto studies, the present study was designed to examine a greater variety of institutional-level variables in combination with carefully selected individual-level variables. Its unique contribution is the inclusion of variables (e.g. teaching load, clerical support) which might help explain how certain institutions and their academic units foster an environment favorable to research and scholarly productivity. Surprisingly, variables such as these have generally been neglected in previous studies. [24]

Procedure

A survey research design was utilized for this study because its basic purpose is to explore the relationship between scholarly publication and selected individual-level

and institutional-level variables.

Data Collection

Data used for this study were collected from several sources:

- 1) a questionnaire (in Appendix A) sent to the heads of American Library Association accredited library and information science programs, excluding those phasing out their M.L.S. programs and those which were conditionally accredited in Spring, 1984;

- 2) author searches for sampled faculty members in LISA, ERIC, OCLC, Dissertation Abstracts Online, and the American Society for Information Science Annual Proceedings for the years 1980-1984;

- 3) searches of standard biographical sources [25], as well as faculty resumes, when available;

- 4) United States and Canadian census figures for 1980 and 1981, respectively [26];

- 5) college guides for enrollment figures [27]; and

- 6) follow-up letters followed by telephone calls to heads of programs, when necessary.

The sampling frame for this study is the 1984 Association for Library and Information Science Education Directory. The study was limited to American Library Association accredited programs with certain exclusions noted earlier. A stratified proportional random sample of 182 faculty members was drawn from the Directory. Data were usable for 168. The standard error of the sample proportion

of non-publishing faculty is estimated at .037. This error was calculated by taking the square root of $p(1-p)/N$, where p is the hypothesized value of the population proportion, and N is the sample size. The value of p was taken from Lane's study, in which she found that 38% of library science doctorates had not published anything scholarly since receiving the doctorate from 3 to 40 years previously. [28]

The sampling technique consisted of drawing independent simple random samples from each of the 61 accredited programs as of Spring 1984. Proportional allocation of the sample size to the individual strata (i.e. number of regular full-time faculty in a school) ensured even the smallest schools of representation. [29]

Heads of programs were excluded from the population to be sampled. This was done for two reasons. First, for purposes of objectivity the investigators did not wish to directly contact any member of the sample. Second, it was felt that deans and directors had primarily administrative responsibilities, rather than research and teaching responsibilities.

Full-time faculty in each school which was listed in the 1984 Directory were assigned consecutive numbers, beginning with 1. Random numbers were generated with a simple random number program in Mbasic. The RANDOMIZE statement was used to reseed the random number generator, thus changing the sequence of random numbers every time the program was run.

Data Reduction

The data were coded for machine tabulation using SPSS-X

User's Guide, second edition [30], and BMDP Statistical Software. [31] A listing of the variables, a description of coding procedure, and the codes appear in Appendix B. A sample code sheet is in Appendix C.

The bibliographies of the sample of faculty members were gathered from the online searches and a manual search of the American Society for Information Science Proceedings, 1980-84. The bibliographies of sample faculty members, which were supplied by 31 of the 58 schools participating in the study, were used to check the accuracy of the online and manual searches. If a scholarly publication on the supplied bibliographies was missing from the online and manual search lists, it was added to that faculty member's totals.

A raw score was then calculated. It is the total number of scholarly publications listed for each author.

Data Analysis

The dependent variable in this study is scholarly publication. It was dichotomized as publish--yes, publish--no, for purposes of statistical analysis. The independent variables are the selected individual-level and institutional-level variables listed and defined previously. Chi square tests and logistic regression were run using these data.

The SPSS subprogram CROSSTABS was used to analyze the relationship between the dependent variables and the independent variables. [32] Chi square was used to test the significance of the relationship between the dependent

variable, raw publication score total, and each of the 18 independent variables. It allows one to make a decision about whether there is a relationship between two variables using frequency data. Either the phi coefficient or Cramer's statistic were used to measure the strength of association, depending on the size of the contingency table.

Chi square was utilized rather than the Pearson product-moment correlation coefficient due to the highly skewed data obtained on scholarly productivity. Therefore, it was necessary to categorize the data which had been collected in the form of continuous numbers. These data are clearly labeled in the chi square tables presented in the next section of this report.

The BMDP subprogram for stepwise logistic regression was used to indicate the variation in the dependent variable that can be explained by all the independent variables acting together. [33] This form of regression is particularly suited to the publication data since the independent variables can be either continuous or categorical. This statistic requires a binary dependent variable. In this case it is publish--no (0), publish--yes (1). The model which is developed through the use of this method indicates the independent variables which are optimal predictors of publication.

Findings

The first part of this section contains chi square findings. Knowledge of the relationships discussed here will

aid in interpreting the multiple regression results which conclude this section.

Chi Square

The chi square test shows that six of the 18 independent variables are related to the dependent variable, scholarly publication, at the .05 level of significance. Those variables will be discussed below. Twelve independent variables were not found to be related to scholarly productivity. The 5 individual-level variables not significantly related are faculty rank, sex, field in which highest degree was earned, number of years professional experience outside teaching, and prestige of the institution from which the highest degree was granted. The 7 institutional-level variables not significantly related are size of the affiliated university, size of the metropolitan area in which the university is located, region in which the university is located, prestige of the affiliated university, total number of hours per week that graduate assistants assist faculty in teaching and/or research, availability of clerical assistance for faculty, and number of different courses taught by faculty during the 1983-84 academic year.

Individual-Level Variables

Two of the five individual-level variables investigated are related to scholarly productivity. The variable, highest degree earned, has a Cramer's statistic of .329 on a scale from 0 to 1, as shown in figure 1. The relationship is a positive one, meaning that sample faculty members with

doctorates published more than those not possessing the doctorate.

Figure 1. Crosstabulation of Scholarly Productivity by Highest Degree Earned.

		Degree			Row Total
		Bachelor	Master's	Doctorate	
PubYesNo	Count Row % Column %				
Did not publish	2 2.9 66.7	29 42.0 67.4	38 55.1 31.1	69 41.1	
Did publish	1 1.0 33.3	14 14.1 32.6	84 84.8 68.9	99 58.9	
Column Total	3 1.8	43 25.6	122 72.6	168 100.0	

Chi Square: 18.13117 Significance: 0.0001 Cramer's V: 0.32852

The second individual-level variable found significantly related to scholarly productivity is number of years elapsed from bachelor's degree to highest degree earned. Strength of the relationship as measured by Cramer's statistic is .234, as shown in figure 2. In general, an inverse relationship exists here. Faculty who took 9-18 years to earn their highest degree published proportionally more than those who took fewer than 9 years or more than 18.

Figure 2. Crosstabulation of Scholarly Productivity by Years Elapsed from Bachelor's to Highest Degree Earned

		Years Categories				Row Total
Count Row % Column %		1 - 8	9 - 13	14 - 18	>18	
PubYesNo						
Did not publish		19 31.7 48.7	10 16.7 27.0	12 20.0 30.8	19 31.7 54.3	60 40.0
Did publish		20 22.2 51.3	27 30.0 73.0	27 30.0 69.2	16 17.8 45.7	90 60.0
Column Total		39 26.0	37 24.7	39 26.0	35 23.3	150 100.0

Chi Square: 8.19044 Significance: 0.0422 Cramer's V: 0.23367

Institutional-Level Variables

Four of the 11 institutional-level variables were found to be significantly related to the raw productivity score at the .05 level. The strongest relationship was found for program type. The phi coefficient is .234. Figure 3 shows that faculty in programs offering the doctorate publish significantly more than those in programs offering the master's degree only.

Figure 3. Crosstabulation of Scholarly Productivity by Type of Program

		Program Type		Row Total
		Doctoral	Not Doctoral	
PubYesNo	Count Row % Column %			
Did not publish	22 31.9 28.6	47 68.1 51.6	69 41.1	
Did publish	55 55.6 71.4	44 44.4 48.4	99 58.9	
Column Total	77 45.8	91 54.2	168 100.0	

Chi Square: 8.24854 Significance: 0.0041 Phi Coefficient: 0.23372

There is a positive relationship between size of faculty and the raw productivity score, as shown in figure 4. Cramer's statistic is .221. In general, the faculty at larger schools publish more than those at smaller schools. Specifically, the data show that for this sample, faculty at schools with more than ten full-time faculty publish more than those in smaller schools.

Figure 4. Crosstabulation of Scholarly Productivity by Size of Faculty

		Faculty Categories				Row Total
Count Row % Column %		<8	8 - 10	11 - 13	>13	
PubYesNo	-----					
Did not publish		15 21.7 36.6	26 37.7 57.8	18 26.1 39.1	10 14.5 27.8	69 41.1
Did publish		26 26.3 63.4	19 19.2 42.2	28 28.3 60.9	26 26.3 72.2	99 58.9
Column Total		41 24.4	45 26.8	46 27.4	36 21.4	168 100.0

Chi Square: 8.23044 Significance: 0.0415 Cramer's V: 0.22134

Prestige of program is also significantly related to the raw productivity score, as illustrated in figure 5. Strength of association as measured by the phi coefficient is .215. It is a positive relationship; high prestige programs have faculty who publish more than faculty in low prestige programs.

Figure 5. Crosstabulation of Scholarly Productivity by Prestige of Program

		Program Prestige		Row Total
Count Row % Column %		high	low	
PubYesNo				
Did not publish		15 21.7 26.3	54 78.3 48.6	69 41.1
Did publish		42 42.4 73.7	57 57.6 51.4	99 58.9
Column Total		57 33.9	111 66.1	168 100.0

Chi Square: 6.86558 Significance: 0.0088 Phi Coefficient: 0.21493

Finally, teaching load has a positive, significant relationship to the raw productivity score. This finding is shown in figure 6. The phi coefficient is .204. Faculty teaching 6 hours or less per week, on the average, published more than those who were in the classroom more than 6 hours per week.

Figure 6. Crosstabulation of Scholarly Productivity by Teaching Load

	Count Row % Column %	Teaching Load		Row Total
		<=6 hrs	>6 hrs	
PubYesNo				
Did not publish	26 40.0 30.6	39 60.0 50.6	65 40.1	
Did publish	59 60.8 69.4	38 39.2 49.4	97 59.9	
Column Total	85 52.5	77 47.5	162 100.0	

Chi Square: 5.95857 Significance: 0.0146 Phi Coefficient: 0.20439

Logistic Regression

Four independent, or predictor, variables entered the stepwise logistic regression. In order of their importance in predicting scholarly publication, they are degree, size of university, availability of clerical assistance, and number of different courses taught (preparations). Table 1 reports a summary of the results at each step.

Table 1. Summary of Stepwise Logistic Regression

Step No.	Term Entered	Degrees of Freedom	Term Removed	Improvement in Chi Square	P-Value
1	Degree	2	----	21.048	0.000
2	Size Univ.	3	----	10.884	0.012
3	Clerical Assistance	1	----	4.321	0.038
4	No. of Preps	1	----	3.737	0.053

Note: A small p-value indicates significant improvement at this step.

One can determine whether or not an inverse relationship exists between the predictor variables and publication by looking at the summary description of all combinations of values of variables in the model. The description is part of the BMDP output. In this case predictors of publication are (1) possession of the doctorate, (2) teaching in a large university (i.e. student population >19,999), (3) having access to non-student clerical assistance, and (4) teaching fewer than four or five different courses in an academic year.

Discussion

This study suggests the importance of institutional-level variables in fostering scholarly productivity. Four of

the six variables in this study that are significantly related to productivity are institutional-level: program type, prestige of the program, size of faculty, and teaching load. To summarize, faculty who publish are part of large academic units offering doctoral degrees. They are part of prestigious programs and tend to spend less time in the classroom teaching fewer different courses than their colleagues in other schools. The data lend empirical evidence to those who believe that a critical mass is needed in terms of faculty size in schools of library and information science. They should not, however, be interpreted as causes of scholarly productivity. The only conclusion which can be made is that these variables are significantly present in the programs of faculty who publish.

Chi Square

Additional CROSSTABS were run on several independent variables in their categorized forms. Preliminary data analyses suggested these variables might be significantly related. Results of the tests are helpful in interpreting the regression statistics which conclude this section of the report.

Prestige of program is related at the .05 level of significance to program type, size of faculty, number of courses taught, teaching load, and prestige of the university from which the faculty member's highest degree was earned. These variables are listed in order from highest to lowest strength of association. Contingency tables for these

variables are in Appendix D.

Program type is significantly related to two other independent variables besides prestige of program. These variables are size of faculty and teaching load. Programs offering the doctorate tend to have larger faculties and lower teaching loads for faculty than programs offering only the master's degree. The strength of these associations is similar to those of prestige of program. This finding is not surprising, given the high degree of association between this variable and program prestige. Contingency tables for these variables are in Appendix E.

Teaching load is positively related to number of different courses taught and negatively related to faculty size, as well as the previously-mentioned prestige of program. Appendix F contains contingency tables for these variables.

Logistic Regression

A few remarks about multiple regression will serve as a preface to the discussion which follows. A variable having a very low correlation with the dependent variable considered by itself may receive quite high weight in a regression analysis involving one or more other independent variables. The weight assigned an independent variable in a regression equation may change in magnitude and sign (i.e. positive, negative) as more independent variables are added. This fact should not be surprising since the contribution a variable makes to predicting the dependent variable, Y, will depend on how much of the information it provides about Y is already

provided by the other independent variables.

Four independent, or predictor, variables entered the stepwise logistic regression equation: degree, size of university, availability of non-student clerical assistance for faculty, and number of different courses taught. The clerical assistance variable does not add much information because most schools indicated they provided clerks to type for faculty. This combination of variables forms the best set for predicting scholarly productivity in this sample. It cannot be said to cause productivity, however. There are many other variables which were not studied due to various limitations. It is entirely possible that with the addition of other variables, the set which predicts productivity would change. Also, it is not known whether the independent variables preceded the dependent variable in time.

Another consideration for interpreting these findings is that the interrelatedness of the independent variables affects their entry into the regression equation. An example in this case is the relationship between teaching load, which did not enter the equation, and number of different courses taught. Teaching load may not have entered the equation because it did not add any more to the prediction of Y after the former variable was added.

This study has addressed selected factors related to productivity. Further study is needed to better understand the nature of the relationship between and among the variables which were found to be significant in this

population. Additional variables should be studied, also.

Conclusion

Several implications arise from this study of scholarly productivity. They are for program and university administrators, for accrediting bodies, and for academic job seekers in library and information science.

It must be kept in mind that causal relationships have not been established by the procedures used in this study. Nevertheless, the findings can be useful to directors of accredited programs during this period of financial belt-tightening in universities. They can be used to justify the need for lighter teaching loads and more faculty, if scholarly productivity is an important goal of the academic unit and the institution.

This study provides further evidence to support earlier studies of scholarly productivity in the sciences, social sciences, and humanities. Different patterns of scholarly publication appear in different disciplines. Forty-one percent of this sample did not publish anything scholarly in the five year period, 1980-84. Only 14.4% of the sample published more than 3 scholarly items in that time. Clearly, these findings have implications for the tenure process in universities. Expectations for research and publication activity among faculty in accredited programs of library and information science should be tempered by the reality of the situation. If they are not, few non-tenured faculty will be tenured, and a shortage of faculty may develop in the years

to come.

Organizations empowered to accredit library and information science programs will find evidence from this study which may be useful in evaluating those programs. These findings may be translated into questions similar to the following:

1. How many of the faculty have earned doctorates?
2. How many years beyond the baccalaureate did faculty take to earn their highest degree?
3. How many regular full-time faculty teach in the program?
4. What are the teaching loads of faculty in the program?
5. How many different courses do faculty teach in an academic year?

Finally, this study has implications for faculty and would-be faculty in accredited programs of library and information science. Those who aspire to do research would do well to seek positions in programs which offer both master's and doctoral degrees, which have large faculties, which are considered prestigious by faculty peers, and to bargain for light teaching loads.

Further Research

Several avenues of investigation appear useful as a follow-up to the present study. They include--

1. refining the predictor variables for scholarly productivity,

2. working toward a causal model of scholarly productivity,
3. identifying other types of publication faculty produce,
4. assessing the impact of faculty publication upon the library profession, and
5. determining the role of prestige in scholarly productivity.

References

1. L. Houser and Alvin M. Schrader, The Search for a Scientific Profession: Library Science Education in the U.S. and Canada (Metuchen, N.J.: The Scarecrow Press, Inc., 1978), p. 24.
2. Pauline Wilson, "Factors Effecting Research Productivity," Journal of Education for Librarianship 20 (Summer 1979):4.
3. Nancy Diane Lane, "Characteristics Related to Productivity Among Doctoral Graduates in Librarianship," (Ph.D. Dissertation, University of California, Berkeley, 1975), p. 121.
4. Mary Kingsbury, "How Library Schools Evaluate Faculty Performance," Journal of Education for Librarianship 22 (Spring 1982):237.
5. Pauline Wilson, "Barriers to Research in Library Schools: A Framework for Analysis," Journal of Education for Librarianship 17 (Summer 1976):5.
6. John W. Creswell and John P. Bean, "Research Output, Socialization, and the Biglan Model," Research in Higher Education 15 (September 1981):87.
7. Lane, "Characteristics Related to Productivity," p. 76, 246.
8. Ibid., pp. 247-248.
9. Ibid., pp. 248-249.
10. Ibid., p. 250.
11. Ibid., p. 249.
12. David S. Webster, "America's Highest Ranked Graduate Schools, 1925-1982," Change: The Magazine of Higher Education 15(May/June 1983):23.
13. U.S., Department of Commerce, Bureau of the Census, United States Census of Population: 1980, vol. 1, Characteristics of the Population; The World Almanac and Book of Facts 1985 (New York: Newspaper Enterprise Association, Inc., 1984), p. 705.
14. Peterson's Guide to Four-Year Colleges, 1985, 15th ed. (Princeton, N.J.: Peterson's Guides, 1984); American Universities and Colleges, 12th ed. (New York: Walter de Gruyter, 1983).
15. Herbert S. White, "Perceptions by Educators and

Administrators of the Ranking of Library School Programs," College and Research Libraries 42 (May 1981):198.

16. Bernard M. Meltzer, "The Productivity of Social Scientists," American Journal of Sociology 55 (July 1949):29; Richard A. Wanner, Lionel S. Lewis, and David I. Gregorio, "Research Productivity in Academia: A Comparative Study of the Sciences, Social Sciences and Humanities," Sociology of Education 54 (October 1981):250.

17. Ibid.

18. Lane, "Characteristics Related to Productivity," pp. 21-22.

19. Ibid., pp.116-117.

20. Meltzer, "The Productivity of Social Scientists," p. 28.

21. Creswell and Bean, "Research Output, Socialization, and the Biglan Model," p. 84.

22. Robert M. Hayes, "Citation Statistics as a Measure of Faculty Research Productivity," Journal of Education for Librarianship 23 (Winter 1983):153-154.

23. Wanner, Lewis, and Gregorio, "Research Productivity in Academia," p. 25; Mary Frank Fox, "Publication Productivity Among Scientists: A Critical Review," Social Studies of Science 13 (1983):292-293.

24. Fox, "Publication Productivity Among Scientists," p. 293.

25. Who's Who in Library Service: A Biographical Dictionary of Professional Librarians in the United States and Canada, 4th ed. (Hamden, Conn.: The Shoe String Press, 1966); A Biographical Directory of Librarians in the United States and Canada, 5th ed. (Chicago: American Library Association, 1970); Who's Who in Library and Information Science, (Chicago: American Library Association, 1982).

26. U.S. Department of Commerce, United States Census of Population: 1980; The World Almanac and Book of Facts 1985, p. 705.

27. Peterson's Guide to Four-Year Colleges; American Universities and Colleges.

28. Lane, "Characteristics Related to Productivity," p. 226.

29. Gouri K. Bhattacharyya and Richard A. Johnson, Statistical Concepts and Methods, (New York: John Wiley &

Sons, 1977), p. 569.

30. SPSS-X User's Guide, 2d ed. (New York: McGraw-Hill Book Co. for SPSS Inc., 1986).

31. W.J. Dixon et al., eds., BMDP Statistical Software: 1983 Printing with Additions, (Berkeley: University of California Press, 1983).

32. SPSS-X User's Guide, pp. 337-352.

33. Dixon, BMDP Statistical Software, pp. 330-346.

Appendix A

SCHOLARLY PRODUCTIVITY STUDY

General instructions.

This questionnaire is factual in nature. The questions are of the type which require numerical answers or check marks. Questions on the first page are general. Questions on the remaining pages refer to the faculty member whose name appears at the top.

Faculty teaching load:

1. How many weeks were in each term in the 1983-84 academic year?

[fall quarter, or semester 1] _____

[winter quarter, or semester 2] _____

[spring quarter] _____

Clerical support:

2. Did staff members in your unit, excluding student assistants, have responsibility for typing manuscripts and providing other clerical support to teaching faculty during the 1983-84 academic year?

[] yes

[] no

If yes: What was the proportion of time devoted to this responsibility by staff members, reported in full-time equivalents (F.T.E.s)?

_____ F.T.E.s

3. Could part-time faculty make use of this clerical support?

[] yes

[] no

If yes: What was your part-time faculty F.T.E. for the 1983-84 academic year?

_____ F.T.E.s

Name: _____

Faculty teaching load:

4. How many hours per week did s/he spend in the classroom teaching, during a typical week in the 1983-84 academic year?

[semester 1, or fall quarter] _____

[semester 2, or winter quarter] _____

[spring quarter] _____

Course load:

5. How many courses with different titles did s/he teach in the 1983-84 academic year?

Number: _____

Research support:

6. Was a graduate assistant or other student assistant assigned to this faculty member in the 1983-84 academic year?

[] yes

[] no

If yes: How many hours per week was a student assigned to this faculty member? (If this assistance was available for only part of the year, please specify the time period, in weeks, beside the number of hours.)

Hours: _____

Appendix B

CODE SHEET

Column Number	Variable Description	Code
1 - 3	Faculty ID number	Assign serially to sample
4	Size of affiliated university (in terms of number of students)	1=under 10,000 2=10,000-19,999 3=20,000-29,999 4=Over 30,000
5	Size of metropolitan area in which university is located	1=less than 100,000 2=100,000-299,999 3=300,000-499,999 4=500,000-799,999 5=800,000-999,999 6=more than 1,000,000
6	Region in which university is located	1=Canada 2=Northeast 3=Southeast 4=Midwest 5=Southwest 6=West
7 - 8	Number of regular full-time faculty members teaching in the accredited program	Code number reported in ALISE Directory
9	Prestige of the accredited program [Note: for purposes of chi square analysis, 1 and 2 categorized as high (1) and 3 categorized as low (2)]	1=high 2=middle 3=low
10	Prestige of the affiliated university [See note above.]	1=high 2=middle 3=low
11 - 13	Faculty teaching load	Code average number of hours spent in classroom per week, 1983-84 academic year

Column Number	Variable Description	Code
14 - 15	Number of different courses taught during 1983-84	Code number reported
16 - 17	Number of hours per week of graduate assistant or research assistant time available to faculty members in sample	Code number reported
18	Clerical staff (excluding graduate assistants) whose job description includes typing manuscripts for faculty	1=yes 2=no
19	Faculty rank	1=instructor 2=assistant professor 3=associate professor 4=professor
20	Sex	1=male 2=female
21 - 22	Number of years of professional experience outside teaching	Code actual number
23	Highest academic degree earned [Note: for purposes of chi square analysis, 3 (advanced master's) categorized as a master's degree]	1=bachelor's 2=master's 3=advanced master's 4=doctorate
24	Field in which highest degree earned	1=library/information science 2=social sciences 3=physical sciences 4=humanities
25	Prestige of the university from which highest degree earned. [Note: See note under Prestige of the Accredited Program variable, above.]	1=high 2=middle 3=low
26 - 27	Number of years elapsed between bachelor's degree and highest degree earned	Code actual number

28 - 29	Number of scholarly publications (raw score)	Code actual number
30 - 31	Weighted scholarly publication score	Code actual number
32 - 33	Normalized scholarly producti- vity score	Code to 1 decimal point
34 - 35	Normalized weighted scholarly productivity score	Code to 1 decimal point
36	Doctoral program offered by academic unit	1=yes 2=no

Appendix C

Faculty Data Sheet

Column Number	Variable Description	Code
1 - 3	Faculty ID number	_____
4	Size of affiliated university (in terms of number of students)	_____
5	Size of metropolitan area in which university is located	_____
6	Region in which university is located	_____
7 - 8	Number of regular full-time faculty members teaching in the accredited program	_____
9 - 10	Prestige of the accredited program	_____
11	Prestige of the affiliated university	_____
12 - 13	Faculty teaching load	_____
14 - 15	Number of different courses taught during 1983-84	_____
16 - 18	Number of hours per week of graduate assistant or research assistant time available to faculty members in sample	_____
19 - 20	Number of FTE persons (excluding graduate assistants) whose job description includes typing manu- scripts for faculty	_____
21	Faculty rank	_____

Column Number	Variable Description	Code
22	Sex	_____
23 - 24	Number of years of professional experience outside teaching	_____
25	Highest academic degree earned	_____
26	Field in which highest degree earned	_____
27	Prestige of the university from which highest degree earned. Determined by prestige of the academic unit in which the degree earned.	_____
28 - 29	Number of years elapsed between bachelor's degree and highest degree earned.	_____
30 - 32	Number of scholarly publications (raw score)	_____
33 - 36	Weighted scholarly publication score (monograph = 5 points; textbook = 3 points; article = 2 points)	_____

Appendix D

Figure 7. Crosstabulation of Prestige of Program by Program Type

	Count Row % Column %	Program Type		Row Total
		Doctoral	Not doctoral	
Prestige				
High		57 74.0 100.0	20 26.0 18.0	77 45.8
Low			91 100.0 82.0	91 54.2
	Column Total	57 33.9	111 66.1	168 100.0

Chi Square: 98.68030 Significance: 0.0000 Phi Coefficient: 0.77902

Figure 8. Crosstabulation of Prestige of Program by Number of Different Courses Taught, 1983-84

	Count Row % Column %	Number of Courses			Row Total
		0 - 3	4	5 or more	
Prestige					
High		33 58.9 47.8	12 21.4 27.3	11 19.6 22.9	56 34.8
Low		36 34.3 52.2	32 30.5 72.7	37 35.2 77.1	105 65.2
	Column Total	69 42.9	44 27.3	48 29.8	161 100.0

Chi Square: 9.24828 Significance: 0.0098 Cramer's V: 0.23967

Figure 9. Crosstabulation of Prestige of Program by Size of Faculty

		Size of Faculty				Row Total
		8 or less	>8 - 10	>10 - 13	>13	
Prestige						
High	Count Row % Column %		3 5.3 6.7	26 45.6 56.5	28 49.1 77.8	57 33.9
Low	Count Row % Column %	41 36.9 100.0	42 37.8 93.3	20 18.0 43.5	8 7.2 22.2	111 66.1
	Column Total	41 24.4	45 26.8	46 27.4	36 21.4	168 100.0

Chi Square: 77.32557 Significance: 0.0000 Cramer's V: 0.67843

Figure 10. Crosstabulation of Prestige of Program by Teaching Load

		Teaching Load		Row Total
		<=6 hrs	>6 hrs	
Prestige				
High	Count Row % Column %	36 65.5 42.4	19 34.5 24.7	55 34.0
Low	Count Row % Column %	49 45.8 57.6	58 54.2 75.3	107 66.0
	Column Total	85 52.5	77 47.5	162 100.0

Chi Square: 4.86949 Significance: 0.0273 Phi Coefficient: 0.18643

Figure 11. Crosstabulation of Prestige of Program by Prestige of University from which Highest Degree Earned

Prestige	Count Row % Column %	Prestige of Degree		Row Total
		high	low	
High		34 64.2 43.0	19 35.8 26.0	53 34.9
Low		45 45.5 57.0	54 54.5 74.0	99 65.1
	Column Total	79 52.0	73 48.0	152 100.0

Chi Square: 4.11415 Significance: 0.0425 Phi Coefficient: 0.17834

Appendix E

Figure 12. Crosstabulation of Type of Program by Size of Faculty

Program Type	Count Row % Column %	Size of Faculty				Row Total
		<=8	9 - 10	11 - 13	>13	
Doctoral	5 6.5 12.2	6 7.8 13.3	33 42.9 71.7	33 42.9 91.7	77 45.8	
Not Doctoral	36 39.6 87.8	39 42.9 86.7	13 14.3 28.3	3 3.3 8.3	91 54.2	
Column Total	41 24.4	45 26.8	46 27.4	36 21.4	168 100.0	

Chi Square: 80.72862 Significance: 0.0000 Cramer's V: 0.69320

Figure 13. Crosstabulation of Type of Program by Teaching Load

Program Type	Count Row % Column %	Teaching Load		Row Total
		<=6 hrs	>6 hrs	
Doctoral	49 65.3 57.6	26 34.7 33.8	75 46.3	
Not Doctoral	36 41.4 42.4	51 58.6 66.2	87 53.7	
	Column Total	85 52.5	77 47.5	162 100.0

Chi Square: 8.33146 Significance: 0.0039 Phi Coefficient: 0.23917

Appendix F

Figure 14. Crosstabulation of Number of Different Courses Taught, 1983-84, by Teaching Load

Courses	Courses Row % Column %	Teaching Load		Row Total
		<=6hrs	>6 hrs	
0 - 3		46 69.7 56.8	20 30.3 26.3	66 42.0
4		16 37.2 19.8	27 62.8 35.5	43 27.4
5 or more		19 39.6 23.5	29 60.4 38.2	48 30.6
	Column Total	81 51.6	76 48.4	157 100.0

Chi Square: 14.99568 Significance: 0.0006 Cramer's V: 0.30905

Figure 15. Crosstabulation of Size of Faculty by Teaching Load

Faculty Size	Count Row % Column %	Teaching Load		Row Total
		<=6 hrs	>6 hrs	
8 or less	17 43.6 20.0	22 56.4 28.6	39 24.1	
9 - 10	19 44.2 22.4	24 55.8 31.2	43 26.5	
11 - 13	23 51.1 27.1	22 48.9 28.6	45 27.8	
>13	26 74.3 30.6	9 25.7 11.7	35 21.6	
	Column Total	85 52.5	77 47.5	162 100.0

Chi Square: 9.12899 Significance: 0.0276 Cramer's V: 0.23739

Bibliography

- American Universities and Colleges. 12th ed. New York: Walter de Gruyter, 1983.
- Bhattacharyya, Gouri K., and Johnson, Richard A. Statistical Concepts and Methods. New York: John Wiley & Sons, 1977.
- A Biographical Directory of Librarians in the United States and Canada. 5th ed. Chicago: American Library Association, 1970.
- Biography Index: A Cumulative Index to Biographical Material in Books and Magazines. Vols. 11, 12. New York: H.W. Wilson Co., 1976-1982.
- Cartter, Allan M. An Assessment of Quality in Graduate Education. Washington, D.C.: American Council on Education, 1966.
- Creswell, John W. Faculty Research Performance: Lessons from the Sciences and the Social Sciences. Washington, D.C.: Association for the Study of Higher Education, 1985.
- Creswell, John W., and Bean, John P. "Research Output, Socialization, and the Biglan Model." Research in Higher Education 15 (September 1981):69-91.
- Fox, Mary Frank. "Publication Productivity Among Scientists: A Critical Review." Social Studies of Science 13 (1983): 285-305.
- Gourman, Jack. The Gourman Report. Los Angeles: National Education Standards, 1980.
- Hayes, Robert M. "Citation Statistics as a Measure of Faculty Research Productivity." Journal of Education for Librarianship 23 (Winter 1983):151-172.
- Herbert, Miranda C., and McNeil, Barbara, eds. Biography and Genealogy Master Index. 2d ed. Detroit: Gale Research Co., 1980. 1981-82 Supplement, 1982. 1983 Supplement, 1983. 1984 Supplement, 1984.
- Houser, L., and Schrader, Alvin M. The Search for a Scientific Profession: Library Science Education in the U.S. and Canada. Metuchen, N.J.: The Scarecrow Press, Inc., 1978.
- Kingsbury, Mary. "How Library Schools Evaluate Faculty Performance." Journal of Education for Librarianship 22 (Spring 1982):219-238.

- Lane, Nancy Diane. "Characteristics Related to Productivity Among Doctoral Graduates in Librarianship." Ph.D. Dissertation, University of California, Berkeley, 1975.
- Meltzer, Bernard M. "The Productivity of Social Scientists." American Journal of Sociology 55 (July 1949):25-29.
- Peterson's Guide to Four-Year Colleges, 1985. 15th ed. Princeton, N.J.: Peterson's Guides, 1984.
- Roose, Kenneth D., and Anderson, Charles J. A Rating of Graduate Programs. Washington, D.C.: American Council on Education, 1970.
- SPSS-X User's Guide. 2d ed. New York: McGraw-Hill Book Company for SPSS Inc., 1986.
- U.S. Department of Commerce. Bureau of the Census. United States Census of Population: 1980. Vol. 1. Characteristics of the Population.
- Wanner, Richard A.; Lewis, Lionel S.; and Gregorio, David I. "Research Productivity in Academia: A Comparative Study of the Sciences, Social Sciences and Humanities." Sociology of Education 54 (October 1981):238-253.
- Webster, David S. "America's Highest Ranked Graduate Schools, 1925-1982." Change: The Magazine of Higher Learning 15(May/June 1983):14-24.
- White, Herbert S. "Perceptions by Educators and Administrators of the Ranking of Library School Programs." College and Research Libraries 42 (May 1981):191-202.
- Who's Who in Library and Information Science. Chicago: American Library Association, 1982.
- Who's Who in Library Service: A Biographical Dictionary of Professional Librarians in the United States and Canada. 4th ed. Hamden, Conn.: The Shoe String Press, 1966.
- Wilson, Pauline. "Barriers to Research in Library Schools: A Framework for Analysis." Journal of Education for Librarianship 17 (Summer 1976):3-19.
- Wilson, Pauline. "Factors Effecting Research Productivity." Journal of Education for Librarianship 20 (Summer 1979):3-24.
- The World Almanac and Book of Facts, 1985. New York: Newspaper Enterprise Association, Inc., 1984.